Partitions

The Knauf range of drywall partitions is the result of decades of experience in developing, testing and supporting that meet the needs of the modern building.

Quickly and simply constructed from high quality Knauf components, our partitions are designed to perform. You can specify Knauf partitions safe in the knowledge that these components will ensure performance, and that our support extends from concept to site.

Contents

General Information

PRODUCTS

Knauf Drywall Metal Sections are manufactured from mild steel sections coated with either a zinc electrolytic process or hot dip galvanised process.
This is then cold formed to the required section profile.

Limitations

Knauf Drywall Metal Sections are not suitable for use in load bearing situations.

If metal sections are to be used in areas of high humidity cut edges must be treated with suitable zinc based primer.

Knauf Drywall Metal Sections are not designed for external use.

Site Storage

Knauf Drywall Metal sections are supplied in small packs and then strapped together to form larger packs for forklift truck off-loading. These packs can be stacked in single packs, in a safe and stable manner on a flat surface.

These bands or straps should not be used for lifting. Metal sections may spring apart when banding is released.

Note: If handling manually, consider risks as required by Manual Handling Regulations 1992.

HEALTH & SAFETY

Knauf Drywall Metal Sections must be handled with care as formed edges and cut ends may be sharp. Gloves should be worn when handling the material to avoid lacerations.

Avoid prolonged contact with skin and wear protective clothing when handling metal components.

Safety glasses should be worn when using power tools.

Head protection should be worn when working with overhead hazards.

An on-site risk assessment should be carried out before use.

For the latest Material Safety Date Sheets on the specific products, please contact Knauf Hong Kong.

PARTITION DUTY - STRENGTH AND ROBUSTNESS

Knauf Partitioning System provides strength and robustness. These duty ratings have been calculated in accordance with BS 5234 : Part 1 & 2 : 1992. The rating is a measure of the ability of the wall to meet the requirements of strength and robustness tests:

- Stiffness
- Surface damage by small hard body impact.
- Resistance to damage by impact from a large soft body.
- Eccentric downward loading of heavyweight anchorage (wash basin)
- Eccentric downward loading of heavyweight anchorage (high level wall cupboard)
- Crowd pressure
- Perforation by small hard body impact.
- Resistance to structural damage by impact from a large soft body.
- Door slamming
- Pull-out of a lightweight anchorage.
- Pull-down of a lightweight anchorage.

As an aid to specification, the figures below are guidelines for duty-strength / robustness rating, and minimum sound reduction values for partitions separating various room types.

The wall duty-strength and robustness-ratings are grouped as follows:-

Category	Building Type
Light Duty (LD)	Residential
Medium Duty (MD)	Office or commercial building
Heavy Duty (HD)	Public or industrial building
Severe Duty (SD)	Heavy industrial building

Suggested minimum sound insulation values of partitions:-

Suggested minimum sound insulation performance levels for privacy in some occupational conditions are given in table below. The values given are based on laboratory measurements.

Location	Weighted sound reduction index Rw dB	Location	Weighted sound reduction index Rw dB
Habitable rooms in dwellings	30	Executive offices	50
Quiet rooms in dwellings	44	Hotel rooms	55
Enclosing bathrooms in dwellings	38	Music practice rooms	60
General offices	38	Cinemas	60
Private offices	44		

NOTE. Where there is a great deal of background noise, a lower R_w may be acceptable.

DESIGN SOLUTIONS PARTITIONS (Fire, Acoustic,Strength)

Table 4.1: System performance

	Acoustic	Fire	Duty rating[1]	Figure[1]
General partition	37dB		Medium	Fig1
General fire performance	42dB	1hrs	Medium	Fig2
High fire performance	41dB	2hrs	Medium	Fig3
High acoustic performance	53dB	2hrs	Medium	Fig4
High acoustic performance	60dB	2hrs	Medium	Fig5
Ultra High acoustic performance	69dB	1hrs	Medium	Fig6
Strength and Robustness	42dB	1hrs	Heavy	Fig7
Strength and Robustness	46dB	2hrs	Severe	Fig8

Note: [1] BS5234 identifies partitions grades by light duty (LD), medium duty (MD), heavy duty (HD) and severe duty (SD) which are determined by partition dimensions, stud type and board type. Any of these solutions may be upgraded by the use of Knauf Denseshield board. Please consult Knauf Hong Kong for details.

Drywall Design for Fire Safety

Fig 1 General partition

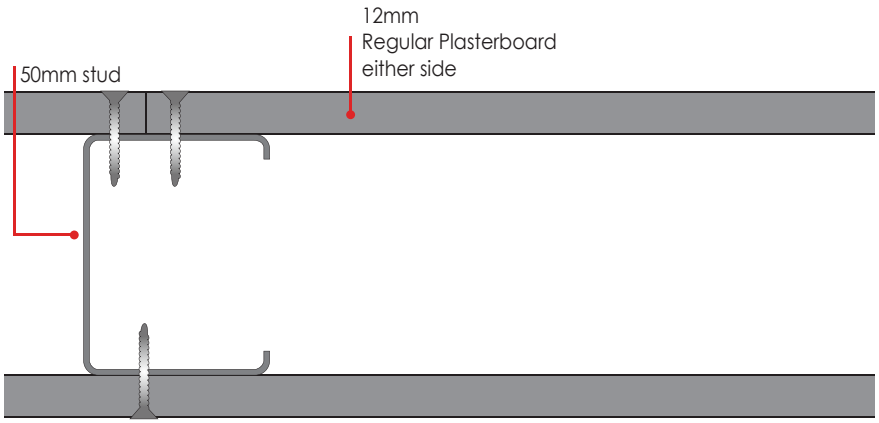


Fig 2 General Fire Performance

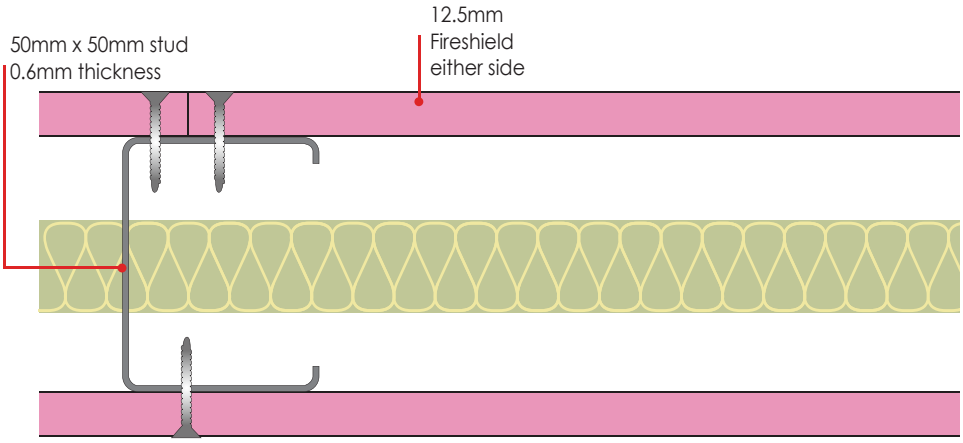
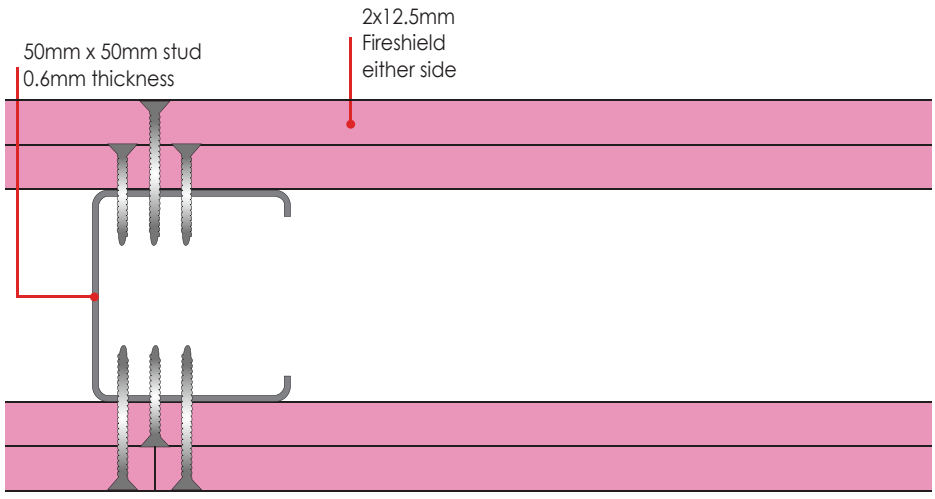


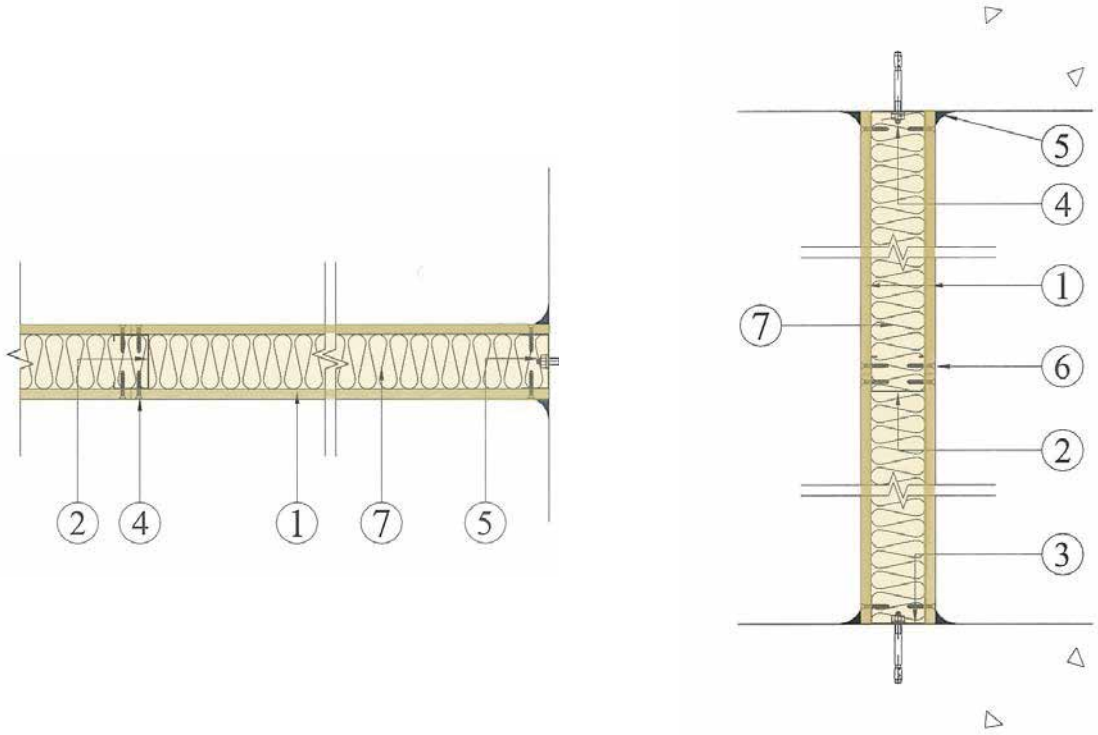
Fig 3 High fire performance



Knauf Partitions

Fig 7 Strength & Robustness

KNAUF DENSESHIELD IMPACT RESISTANT PARTITION SYSTEM
meeting " Heavy Duty" criteria of BS5234"Part 2:1992



Technical Data:

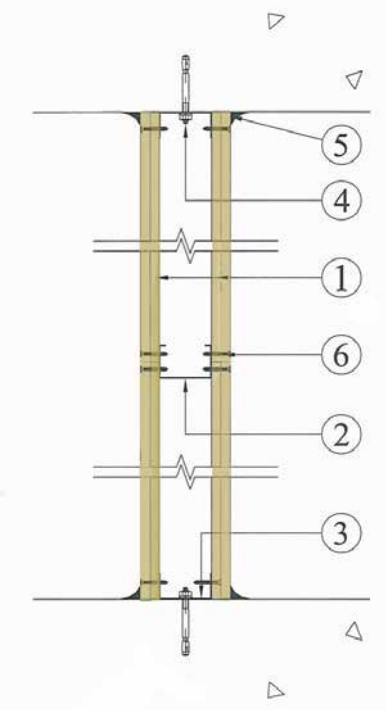
1-Hour fire rating, integrity & insulation
according to BS476: Part22, with fire risk from both sides
Overall partition thickness = 75mm
Sound reduction Rw = 42 dB

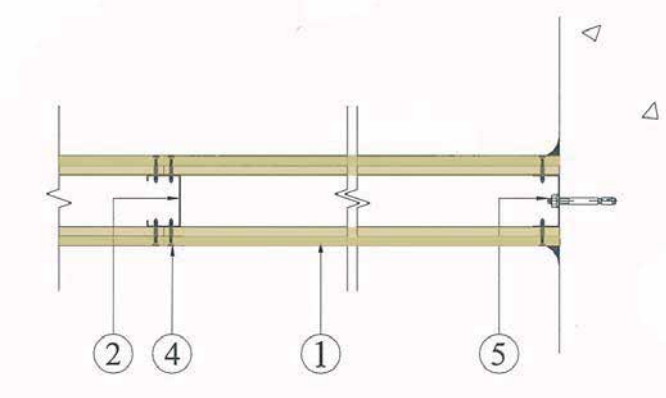
① KNAUF Denseshield impact resistant fire rated plasterboard 12.5mm thick
② KNAUF 50mm x 50mm x 0.6mm G.I. stud at 610mm centres
* When 75mm wide frame is used, this Denseshield partition meets the 'Heavy Duty' criteria of BS5234:Part2:1992
③ KNAUF 50mm x 40mm x 0.6mm G.I. 'U' channel
④ Nailable plug at 600mm centres
⑤ Knauf intumescent and acoustic sealant
⑥ Drywall screw at 300mm centres
⑦ 50mm thick, 60kg/cu.m, KNAUF rockwool

Knauf Partitions

Fig 8 Strength & Robustness

KNAUF DENSESHIELD IMPACT RESISTANT PARTITION SYSTEM
meeting " Severe Duty" criteria of BS5234:Part 2:1992





Technical Data:

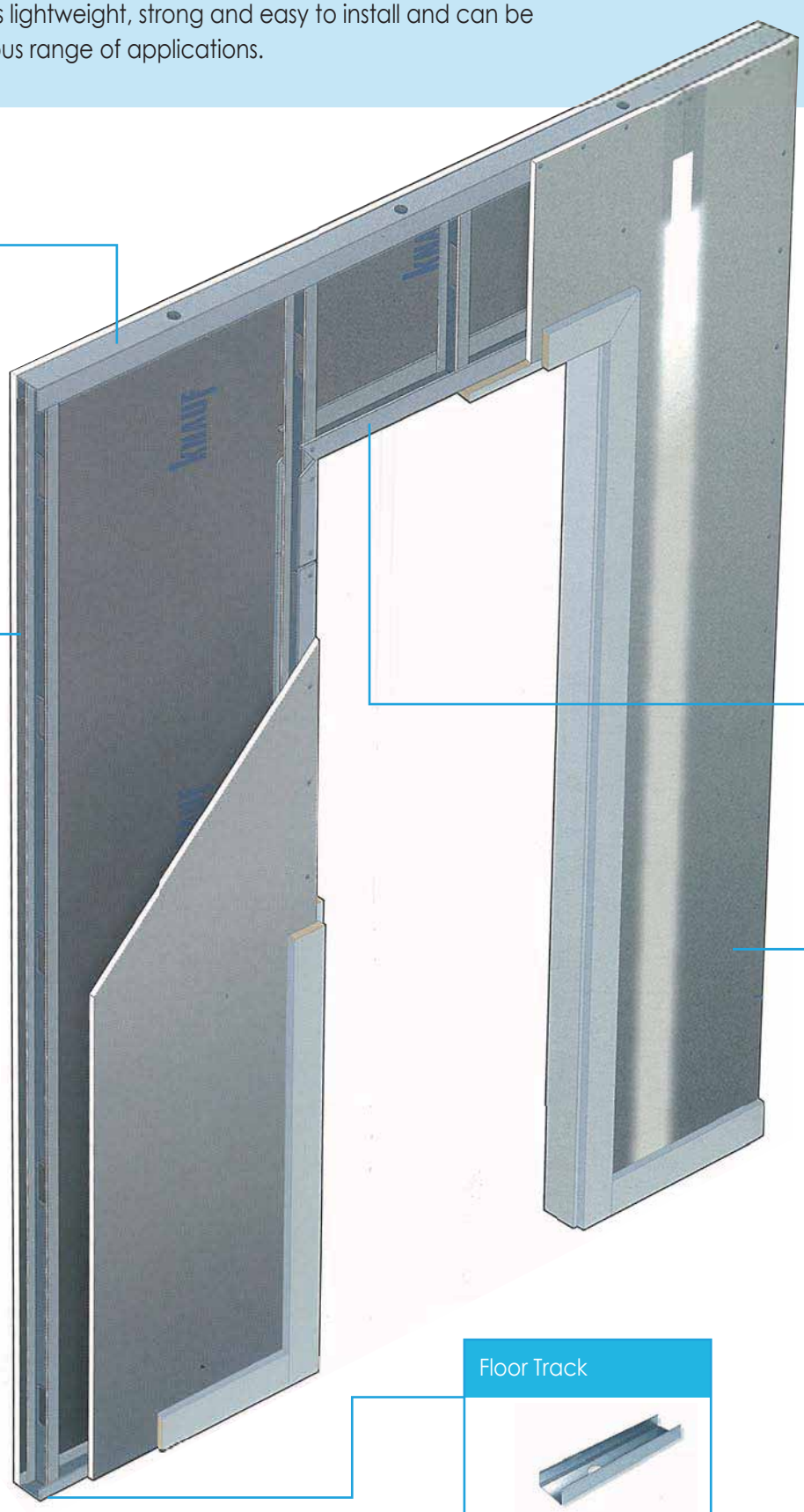
2-Hour fire rating, integrity & insulation
according to BS476: Part22, with fire risk from both sides
Overall partition thickness = 125mm
Sound reduction Rw = 46 dB

① KNAUF Denseshield impact resistant fire rated plasterboard 2 x 12.5mm thick
② KNAUF 75mm x 50mm x 0.6mm G.I. stud at 610mm centres
③ KNAUF 75mm x 40mm x 0.6mm G.I. 'U' channel
④ Nailable plug at 600mm centres
⑤ Knauf intumescent and acoustic sealant
⑥ Drywall screw at 300mm centres

Remark: * with the inclusion of 50mm thick, 60kg/cu.m rockwool,
the sound reduction Rw is 54 dB

Knauf Partitions

Knauf Metal Sections is our most versatile partition solution, able to meet nearly every performance requirement. The Knauf partition system is lightweight, strong and easy to install and can be specified with confidence for an enormous range of applications.



Head Track

Knauf 'U' Channel forms head plate.

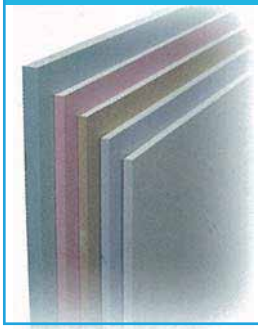
Knauf Deep Flange 'U' Channel for deflection head.

Stud

Knauf metal studs simply twist and snap into head and floor tracks.

Knauf 'C' Stud lightweight steel section.

Knauf Plasterboard



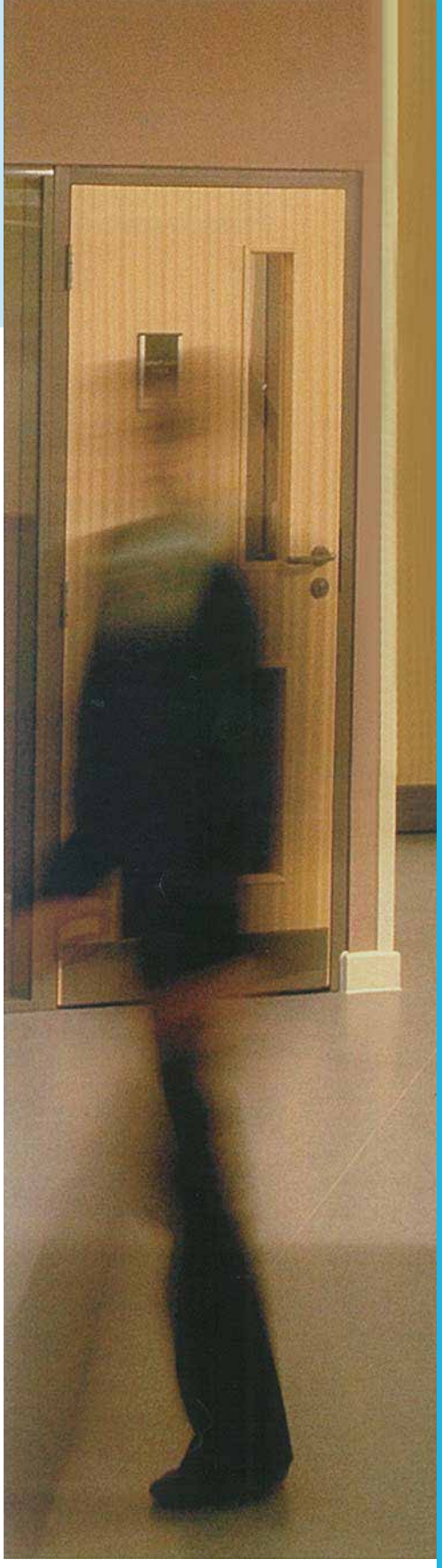
The full range of acoustic, fire resistant, moisture resistant, impact resistant to provide performance and design solutions.

Floor Track

Knauf 'U' Channel secured to floor.

Knauf Partitions

Knauf partition copes easily with the most demanding fire, sound, moisture and impact resistance requirements. Knauf components are designed to work together and provide you a fully integrated system.



Key Features:

- Versatile, light, fast and easy to install
- System can utilise the entire range of boards
- Optimised solutions to meet sector specific requirements
- Minimum amount of components required to construct
- Comprehensively developed and site-proven

Door Head

Knauf Deep Flange 'U' Channel snipped, bent, returned and fixed to vertical stud.

Fixings

Knauf Drywall Screws are self drilling and self tapping and designed to work perfectly with Knauf Plasterboards.

Knauf Ready Mix

Readymix solution.

Knauf Partitions

Installation Procedures

Knauf partitions are designed to be simple and fast to install. Knauf Drywall Technical Services are on hand should you have any questions or unusual situations to deal with.

General

Knauf Performer partitions must be installed in accordance with Knauf Drywall's recommendations and the recommendations of BS 8212: 1995 and BS 8000; Part 8: 1994.

Perimeter Framing

Knauf 'U' Channels should be used for the head and base of the partition. Knauf 'C' Studs should be used to form any abutments and to frame openings. Bed each section on two continuous beads of Sealant or Intumescent and Acoustic Mastic as specified. Secure with suitable fixings at maximum 600mm centres and 50mm from ends of channels or studs. Separate studs and channels forming the perimeter need not be joined, but should be tightly butted together.

Replace Knauf 'U' Channel with a Knauf Deep Flange 'U' Channel when forming a deflection head.

Partitions constructed to provide fire and / or acoustic separation are required to span from structural floor to structural soffit.

Vertical Studs

Studs should be postitioned within the channels to coincide with the abutments of the boards, at centres dependant on the performance requirement of the system. In general there is no requirement to secure the metal at this point as this will be achieved once the boards are screw-fixed.

Knauf 'C' Studs should be trimmed to within 5mm of the slab to soffit height. For deflection heads: studs should be cut short to allow for required clearance within Knauf Deep Flange 'U' Channel.

Knauf 'C' Studs can be extended by forming a splicing detail. See details on page.

Insulation

Subject to the performance requirements once the studs have been located in the Knauf 'U' Channels and one side has been boarded, Knauf insulation as specified should be inserted between the studs vertically. Care should be taken to ensure that the insulation is fitted neatly without gaps at abutments or vertically between different rolls.

Support for Horizontal Joints in Facings

To back horizontal joints in outer board layers, Knauf Fixing Channel or Knauf Flat Fixing Plate should be fitted across the face of all studs, secured with 2 Knauf Drywall Screws per stud to both faces or between board layers.

Doorways

The head is formed with Knauf Deep Flange 'U' Channel, snipped and bent back and screw fixed with Knauf Screws to the studs.

Boarding

All boards should be offered up to the frame with the face of the board outwards and secured with Knauf Drywall Screws at 300mm maximum centres. Fixing centres should be reduced to 200mm at corners.

Boarding should commence at one end and work across the partition. At head, floor and abutments, board edges should be bedded on to continuous beads of Sealant. Board joints in multiple layers should be staggered both vertically and horizontally by at least 600mm.

Deflection Heads

The maximum deflection should be no more than half the flange length of the Knauf Deep Flange 'U' Channel and for a downward direction.

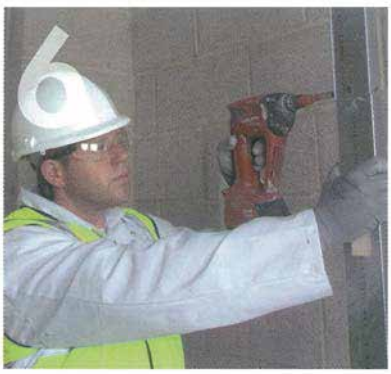
After fixing the head track, the floor track should be positioned by using a vertical stud and a laser/spirit level.

Fixing Knauf 'C' Stud to form the partition frame abutment.

Twisting Knauf 'C' Stud into position.

Snip and bend back Knauf 'U' Channel for extra rigidity around door openings.

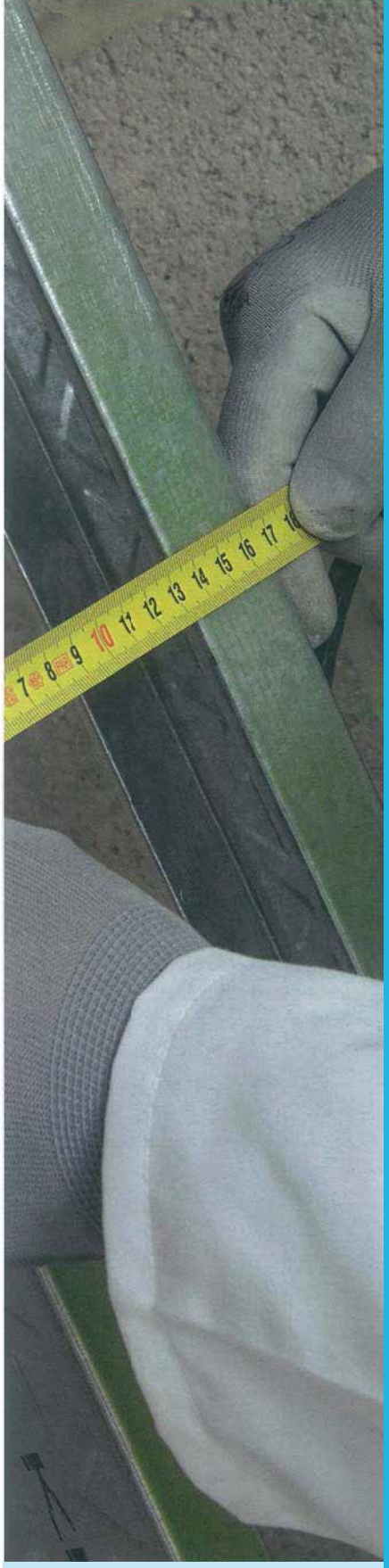
Snip and bend back Knauf Deep Flange 'U' Channel to form the door frame.



Fixing Knauf Deep FLange 'U' Channel to studs at door opening.

Insert timber battens in the Knauf 'C; Studs for extra rigidity around door frame if required.

Fixing Knauf Plasterboard to the completed framework.



Knauf Partitions

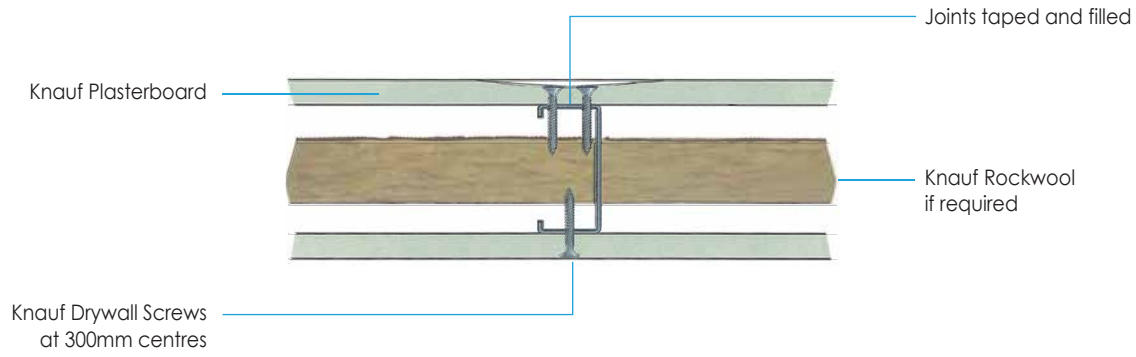
Application Details

These details represent some of the most common design situations relevant to the Knauf partition system. Knauf Drywall Technical Services can advise on any specific detail you are trying to achieve.

'C' Stud Single Boarded

Detail 01

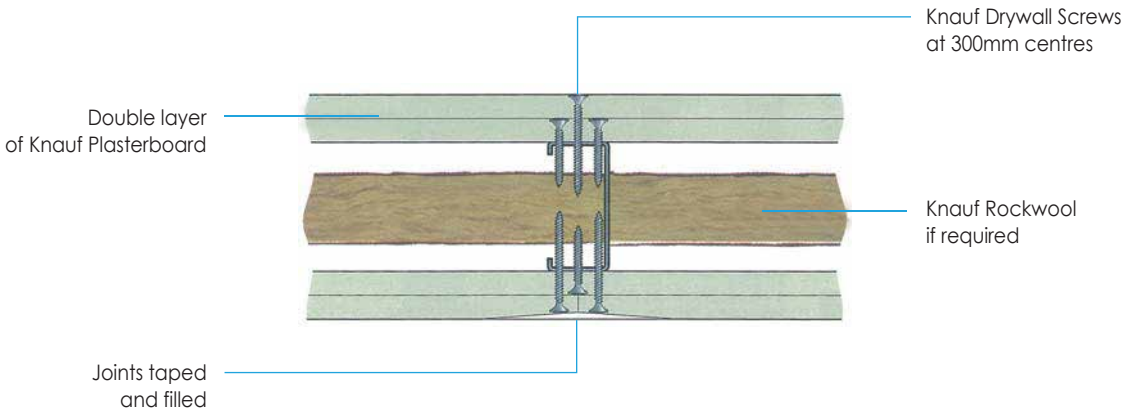
Any type of Knauf plasterboard can be fixed to knauf 'C', to achieve different performance requirements.



'C' Stud Single Double Boarded

Detail 02

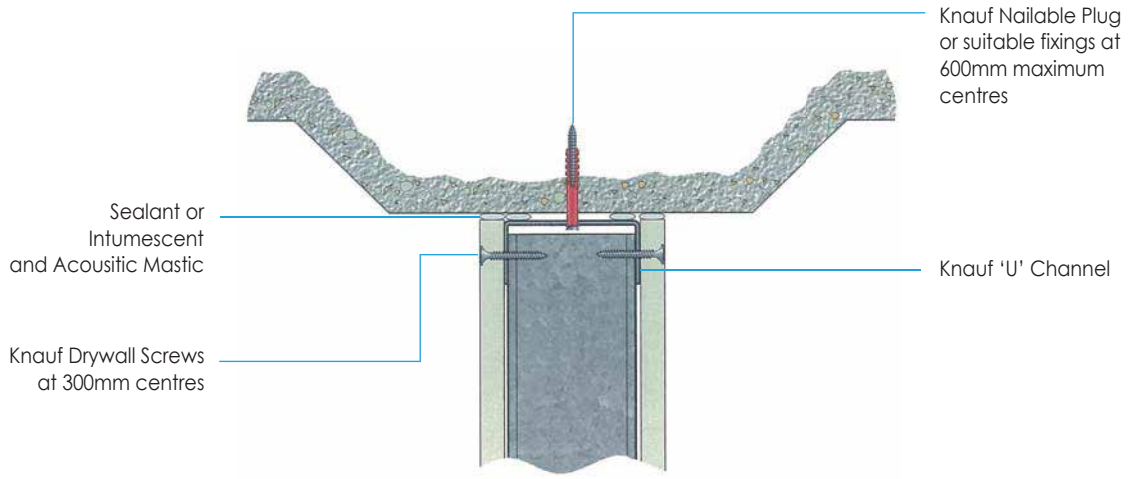
Double boarding is one method to achieve increased performance levels.



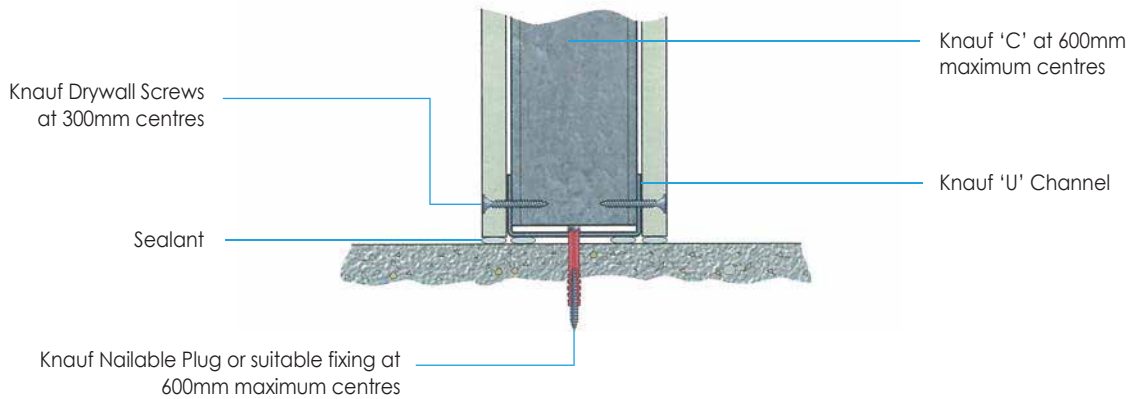
Standard head and Floor

Detail 03

The Knauf 'U' Channel Should be fixed to the structural soffit at maximum 600mm centres. Channels should be bedded securely onto continuous beads of sealant to ensure optimum sound reduction by preventing air paths. If deflection of the soffit is expected, please refer to deflection head detailing.

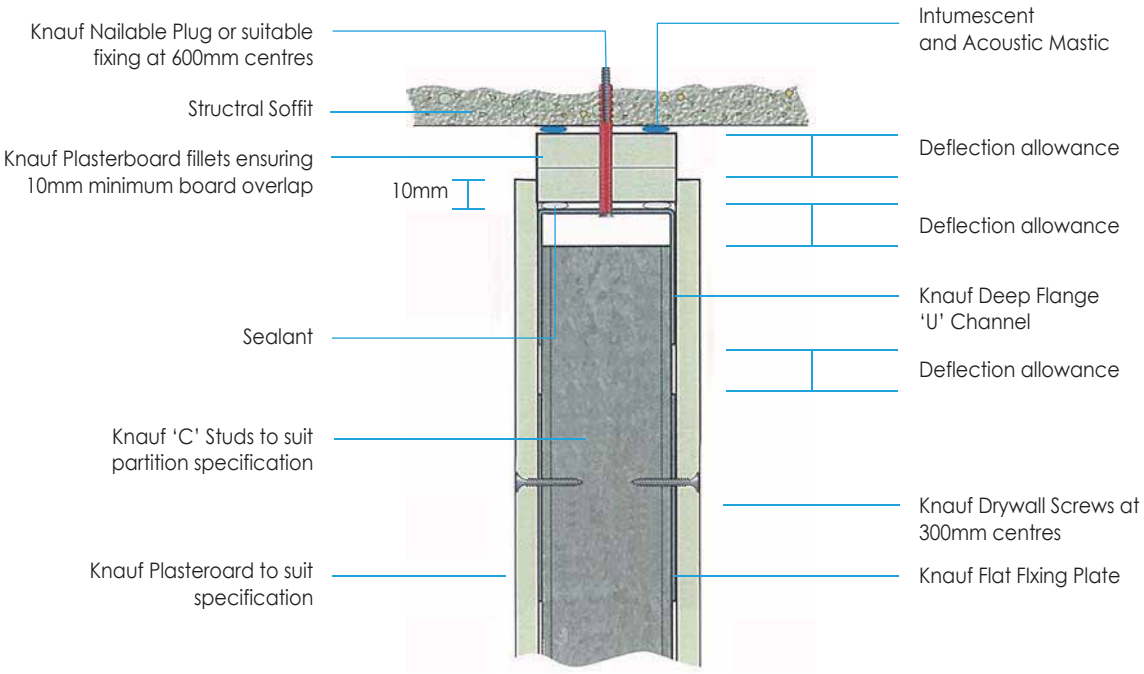


The Floor detail is a mirror image of the Standard Head Detail. Single facings are shown as an example. Partitions should always be fixed to the finished floor.

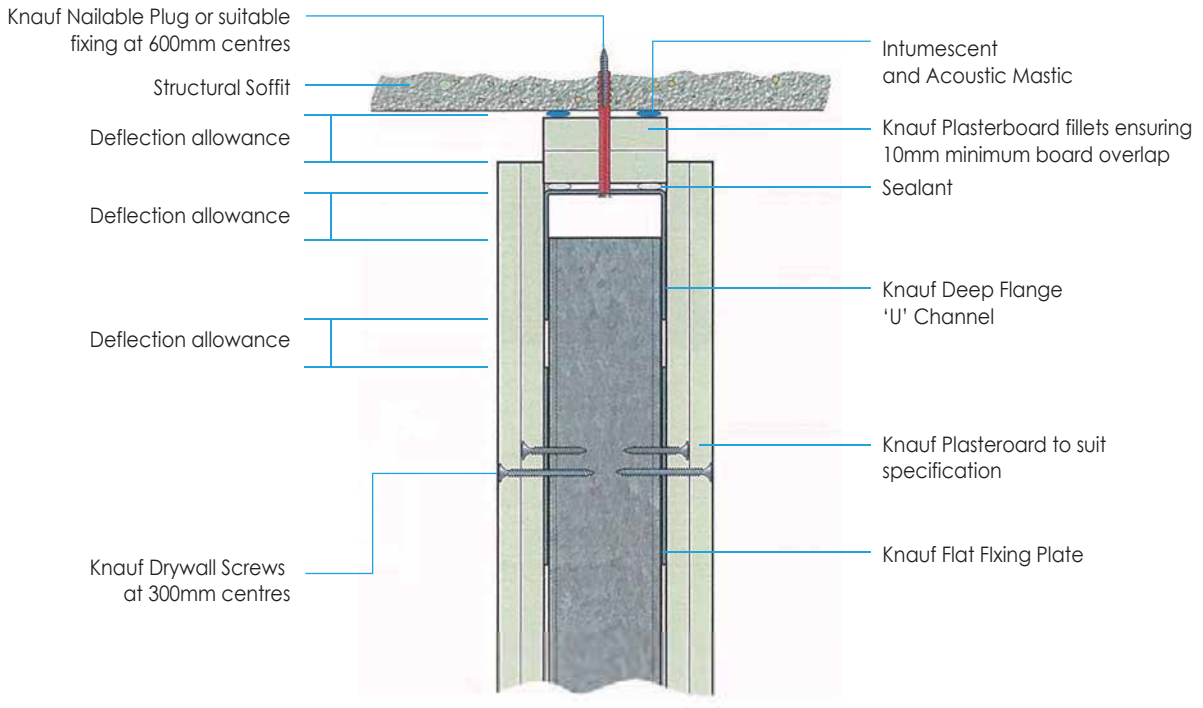


Knauf Partitions

Detail 05

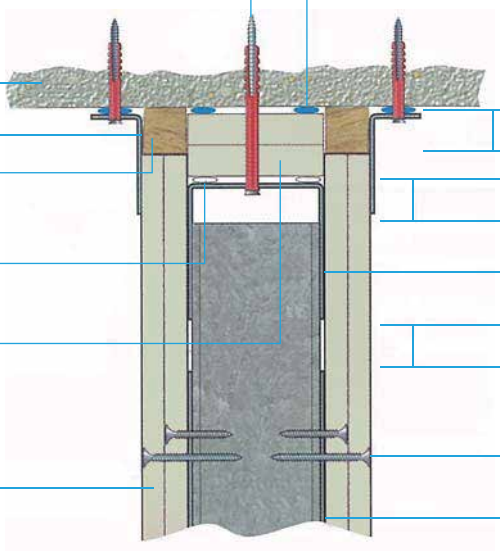


Detail 06

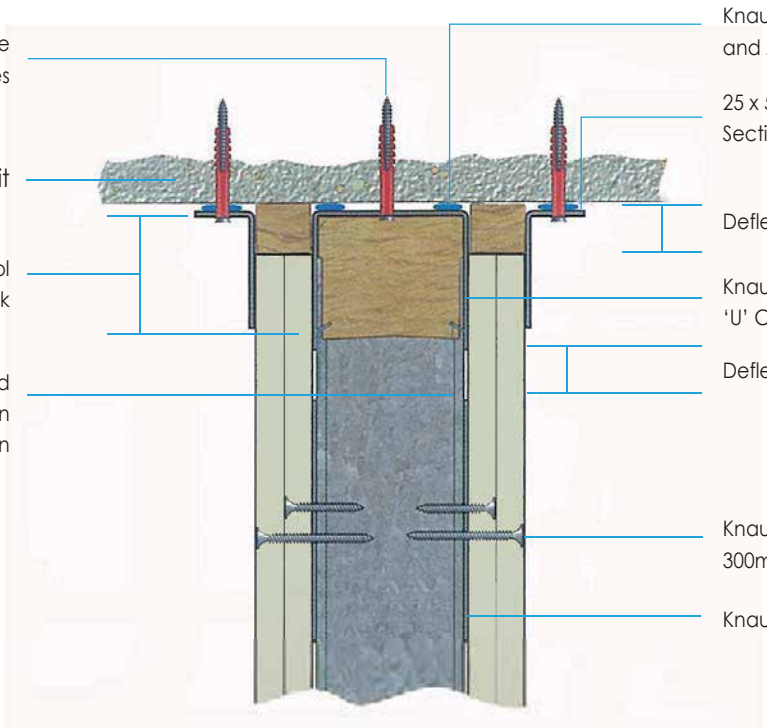


Knauf Partitions

Detail 07



Detail 08

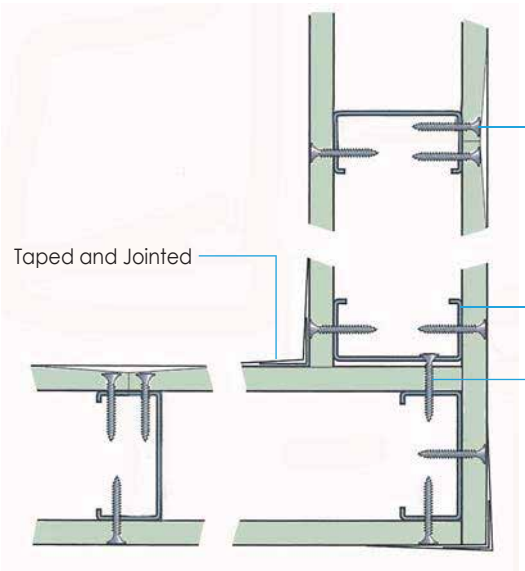


Knauf Portitions

Corner 90º

Detail 11

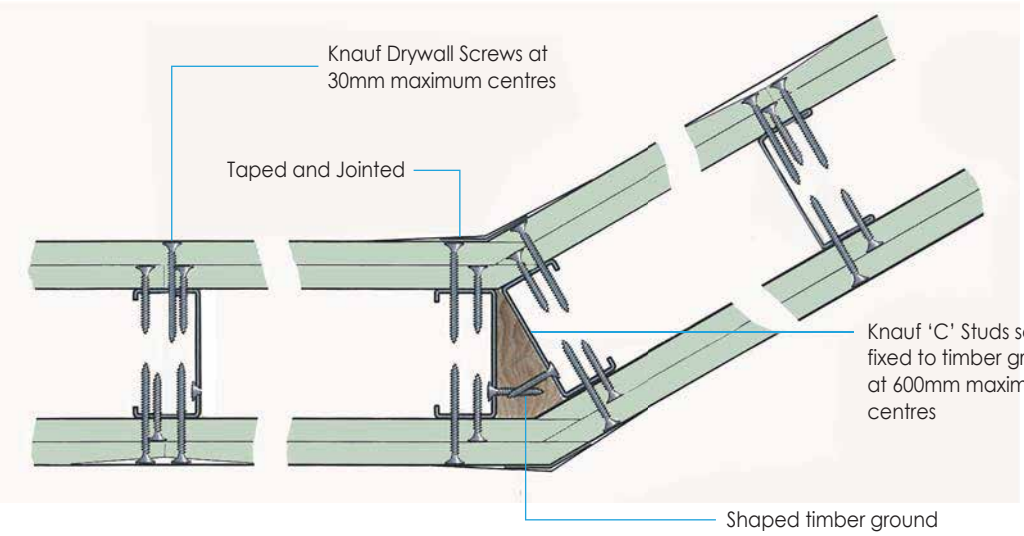
Fixings at the junction should be made from stud to stud.
Knauf 'C' Studs form intersections.



Splayed Corner

Detail 12

Treated and prepared timber grounds can be incorporated to create splayed corners.
Knauf 'C' Studs form intersections.

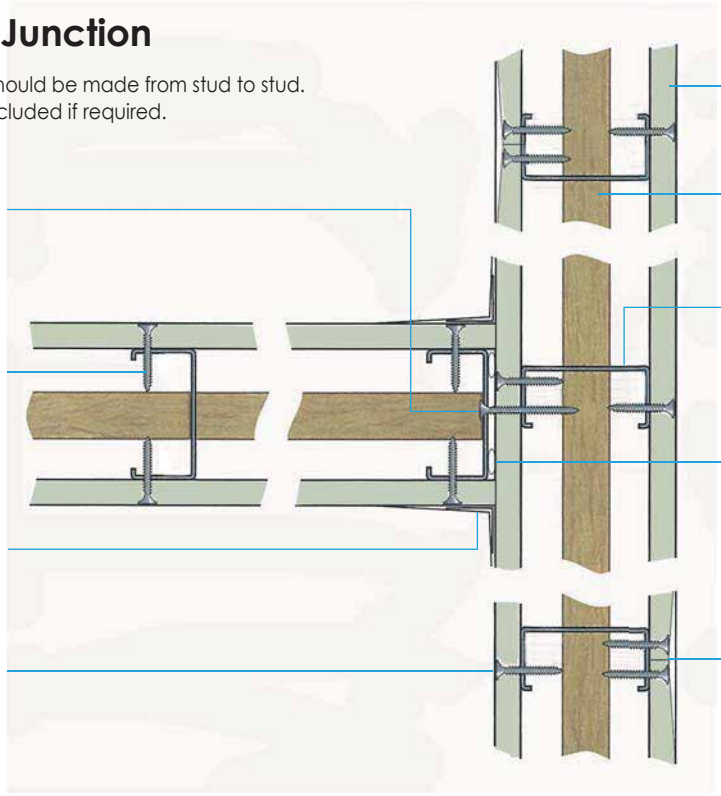


Knauf Partitions

Detail 13

Abutment T-Junction

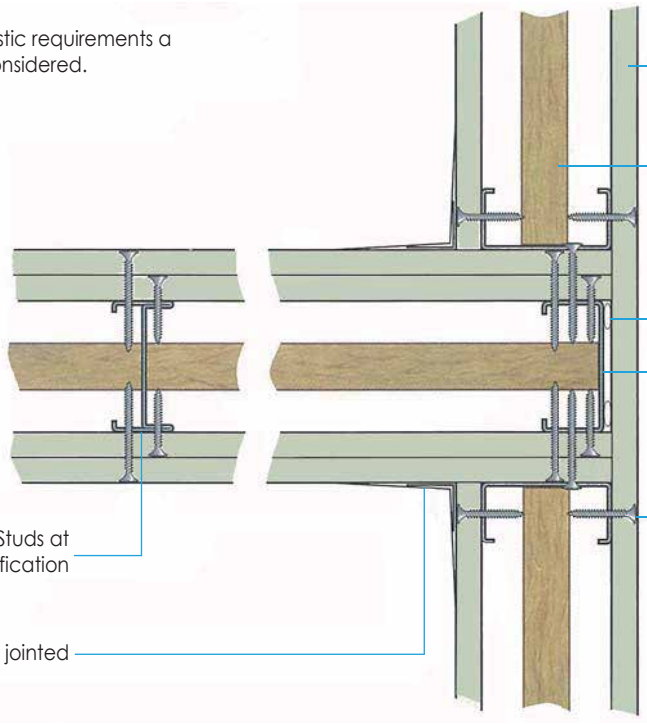
Fixing at the junctions should be made from stud to stud.
Extra studs should be included if required.



Detail 14

Abutment T-Junction, High Performance Flanking Intersection

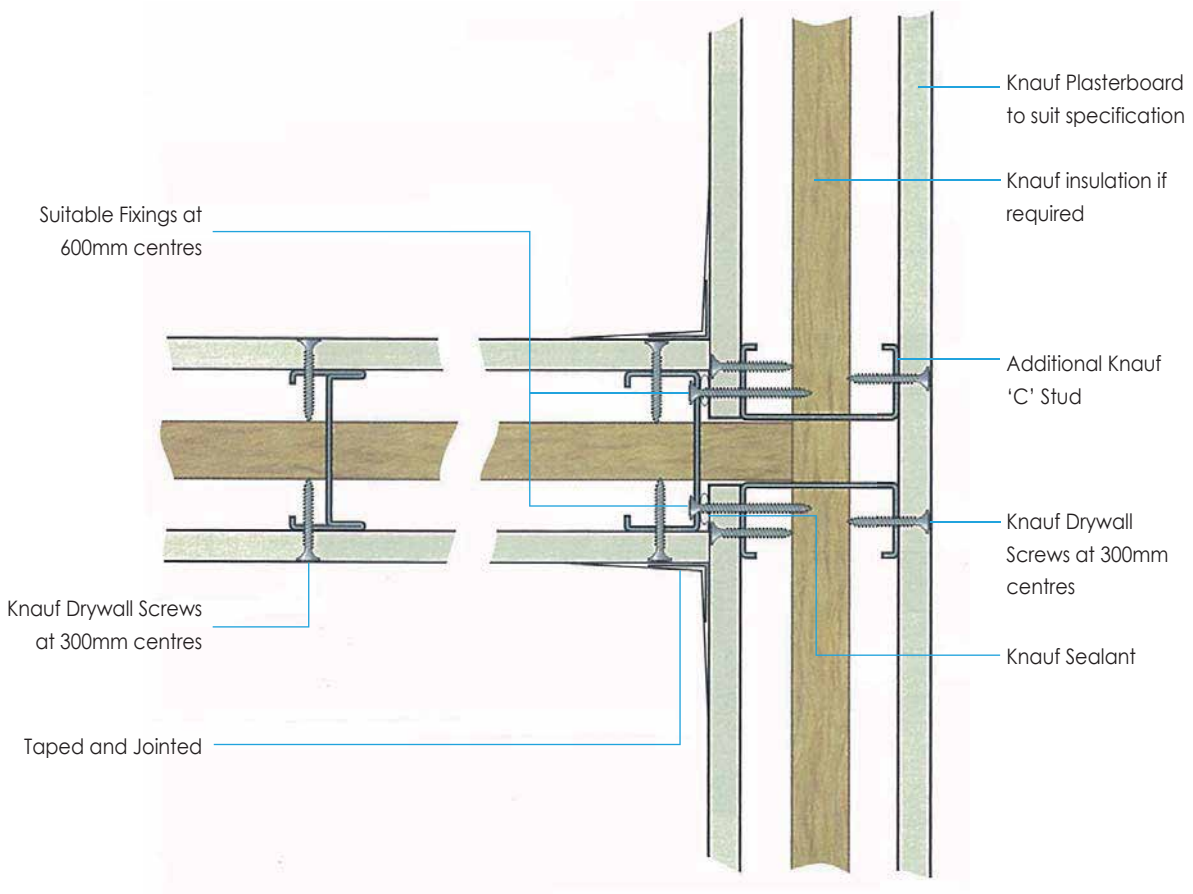
Where there are high acoustic requirements a flanking detail should be considered.



Detail 15

Abutment T-Junction, Alternative Flanking Detail

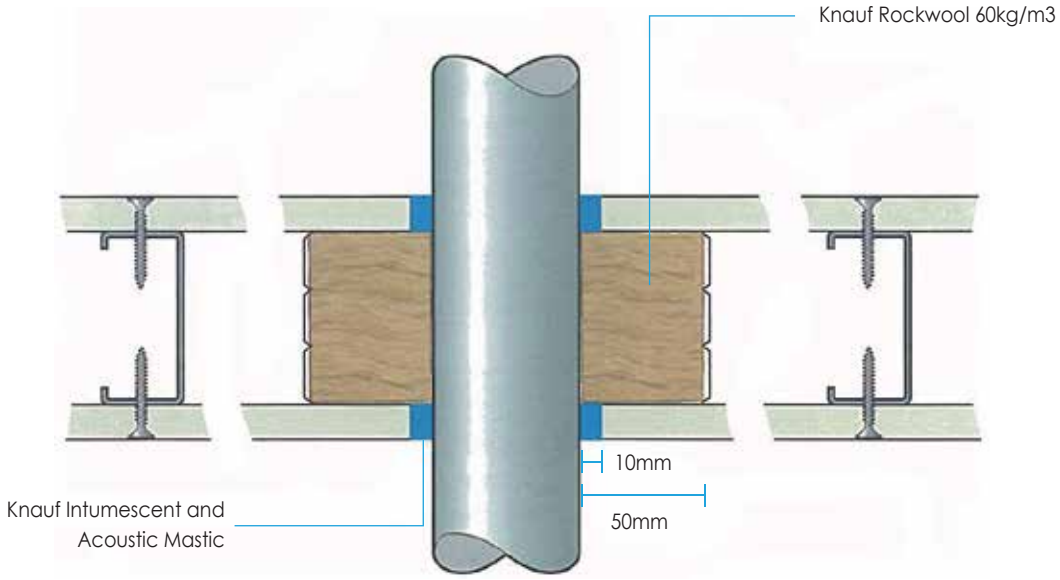
Fixing at the junctions should be made from stud to stud.
Extra studs should be included. A break in the plasterboard helps to prevent flanking sound transmission.



Detail 16

Pipe Penetration

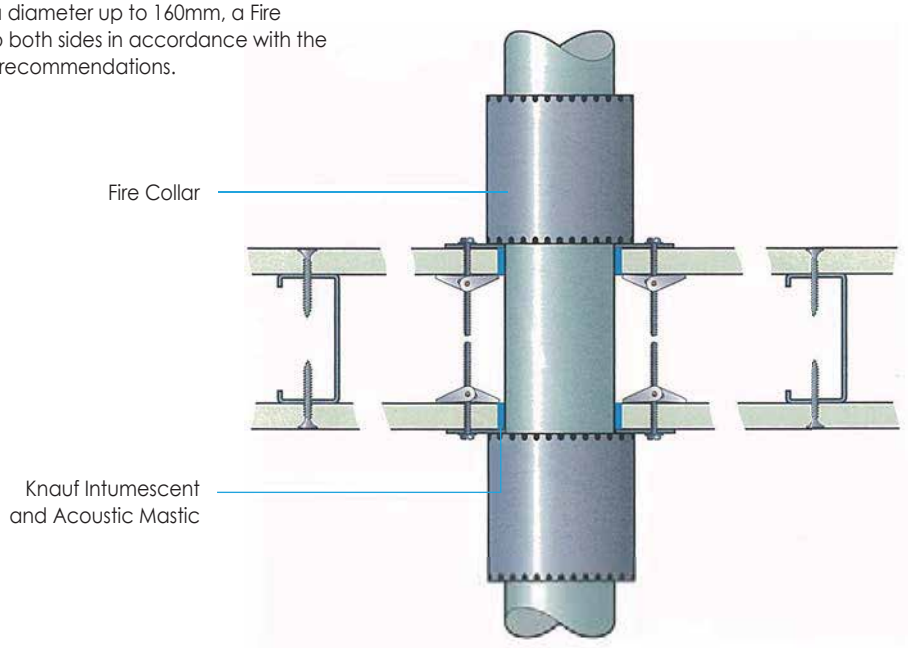
Suitable for small pipes - typically up to 40mm diameter. The mineral wool must be secured around the pipe with wire or mesh.



Detail 17

Pipe Penetration

For pipes with a diameter up to 160mm, a Fire Collar is fixed to both sides in accordance with the manufacturers recommendations.

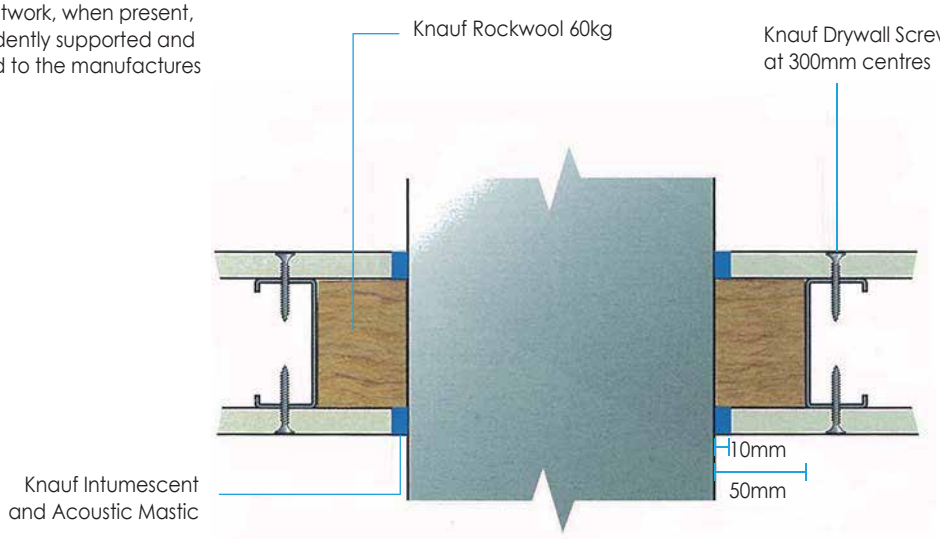


Detail 18

Duct Penetration

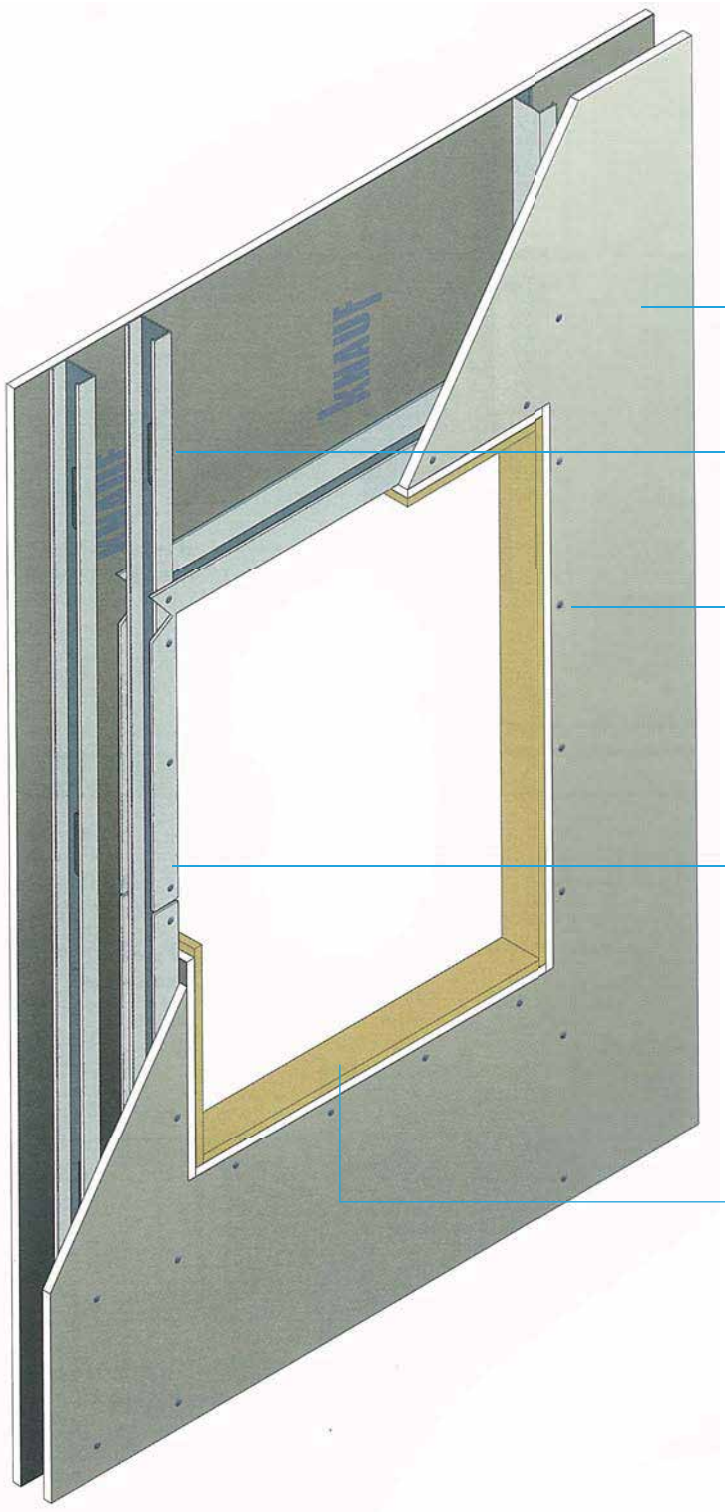
For pipes and ducts above 160mm diameter. Knauf 'C' Studs and 'U' Channel form an opening for the duct.

Fire dampers in ductwork, when present, should be independently supported and installed with regard to the manufactures instructions.



Detail 19

Typical Framing Out Detail



Knauf Plasterboard to suit specification

Additional Knauf 'C' Studs as trimmers each side of opening

Knauf Plasterboard returned and screw fixed to trimming stud/channel as lining to opening

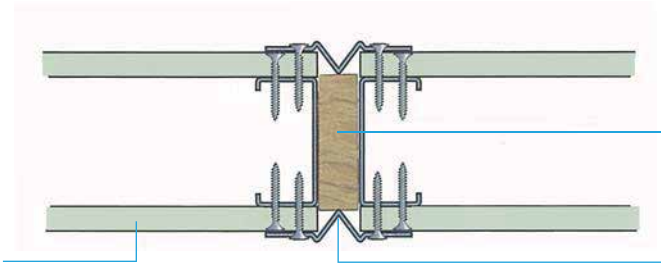
Ends of Knauf Deep Flange 'U' Channel snipped, bent and turned up or down a minimum 300mm and fixed to studs with two Knauf Wafer Head Jackpoint Screws each side.

Fire stopping insulation (by others)

Detail 20

Movement Control Joint

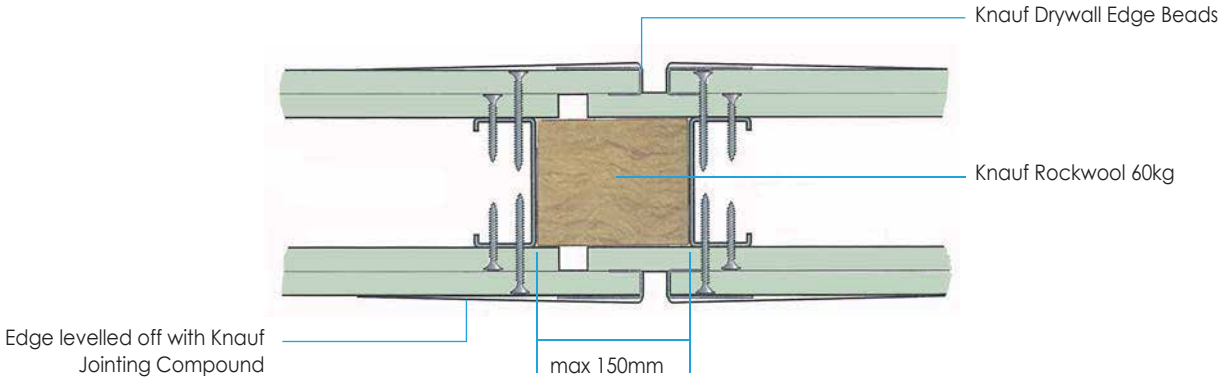
Allows lateral movement of up to 7mm. The control joint must be fixed at 150mm centres on both edges. This detail



Detail 21

Expansion Joint

This allows more movement than the previous detail, in conjunction with a shadow gap formed by Knauf Drywall Edge Beads.



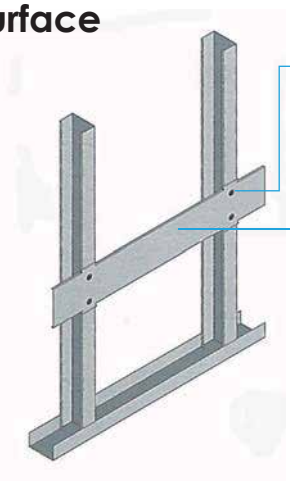
Knauf Partitions

Light Weight Fixings Parallel to Surface

Detail 22

Suitable for medium weight fixings where the applied load is fixed and continuous, and for lightweight fixings where the load may be subject to some movement (e.g. through removable objects).

- Suggested applications: Curtain rails, pictures.

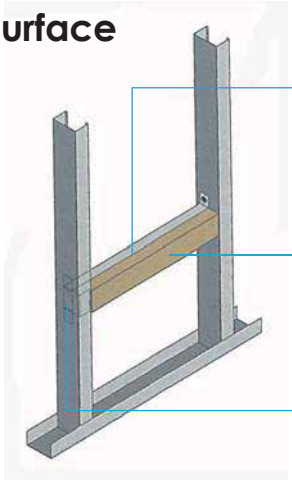


Heavy Weight Fixings Parallel to Surface

Detail 23

Suitable for heavyweight fixings where the applied load is fixed and continuous, and for medium weight fixings where the load may be subject to some movment (e.g. through removable objects).

- Suggested applications: baths (lateral location only), cupboards, shelving, handrails, radiators.

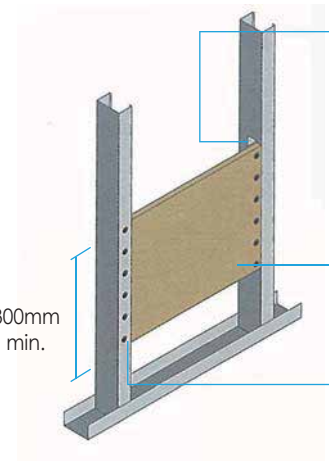


Heavy Weight Fixings with Moment

Detail 24

For use where the applied load is not directly adjacent to the board surface, thus producing a twisting force that the other fixing details are not capable of withstanding. It is also suitable for fixing items that are likely to receive rougher than usual treatment.

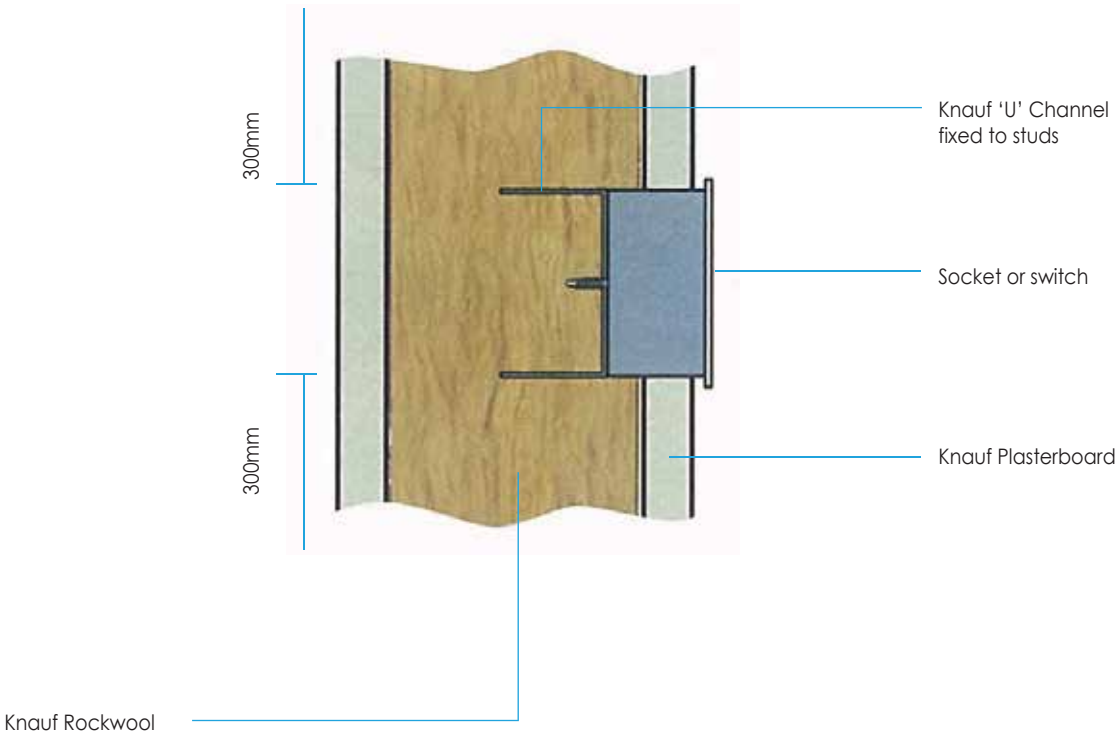
- Suggested applications: TV mounting arms, pay telephones and hoods, disabled grab rails.



Sockets and Switches

Detail 25

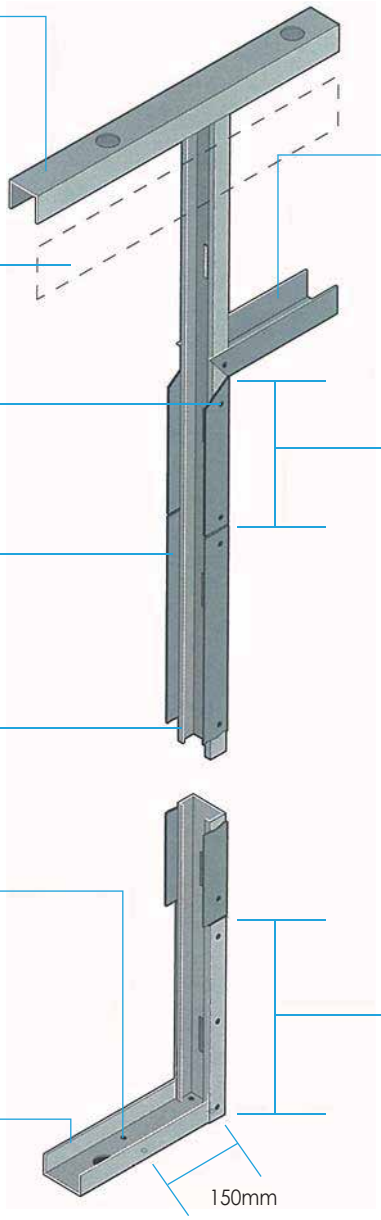
These can be fixed back to Knauf 'U' Channels or sections of Knauf Fixing Channels fitted between studs. Mineral wool packing maintains the fire resistance of the partition.



Detail 26

0 - 60Kg Door Jamb

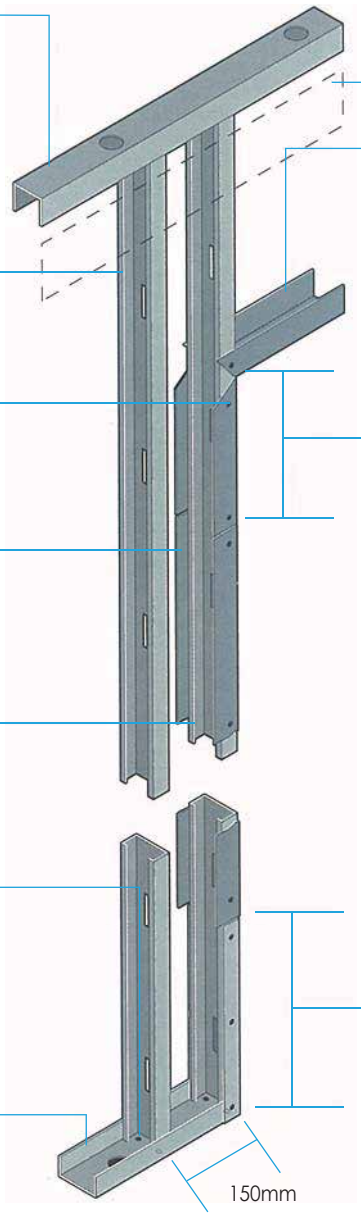
Knauf 'U' Channel is snipped, bent back and screwed to the Knauf 'C' Stud with Wafer Head Jackpoint Screws.



Detail 27

60 - 100Kg Door Jamb

Knauf 'U' Channel is snipped, bent back and screwed to the Knauf 'C' Stud with Wafer Head Jackpoint Screws.



Knauf Deep Flange 'U' Channel (70mm flange) fixed to structural soffit at maximum 600mm centres

Additional Knauf 'C' Stud positioned 150mm from door jamb stud each side of door opening

Knauf Wafer Head Screws at 300mm maximum centres

Knauf Deep Flange 'U' Channel (70mm flange) section to each side of door opening fitted between returned legs at door head and base

Knauf 'C' Stud to each side of door jamb

Two pairs of fixings: One pair at jamb stud base; One pair at 150mm from door jamb. Remainder of Knauf 'U' Channel secured at 600mm centres

Knauf 'U' Channel with 300mm leg cut and returned up door jamb stud

Knauf Flat Fixing Plate (If required within the appropriate deflection head detail)

Knauf Deep Flange 'U' Channel (70mm flange) cut and bent down jamb stud each side, secured with Knauf Wafer Head Screws at intersections and at 200mm centres on each return

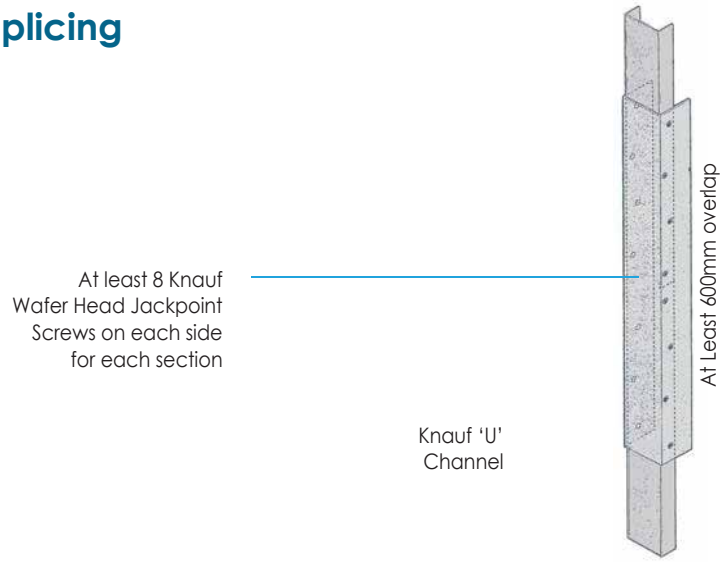
Minimum 250mm - to meet channel below

300mm turned up floor channel secured with Knauf Wafer Head Screws at 150mm centres

Knauf Partitions

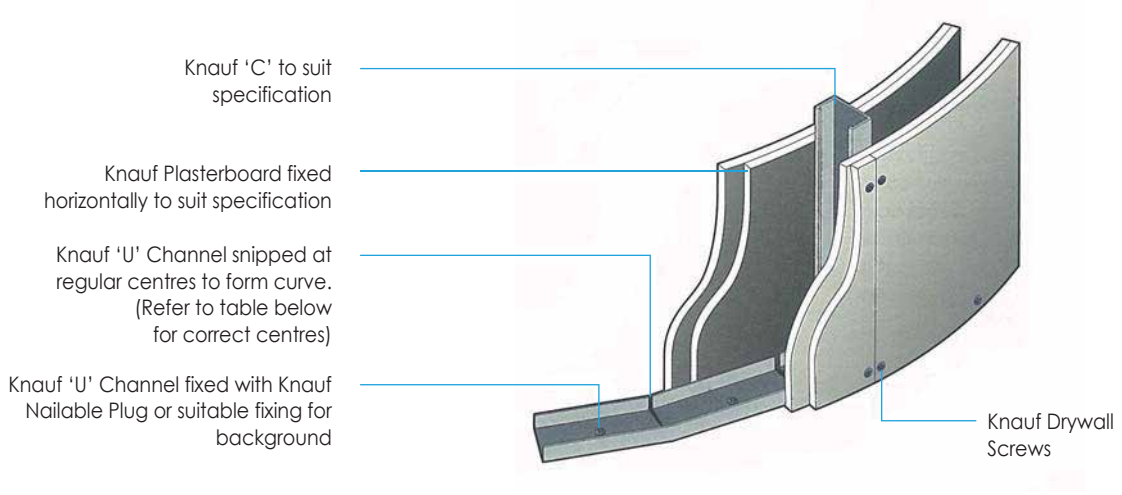
Detail 28

"C" Stud Splicing



Detail 29

Curved Partition



Radius	'U' Channel Cuts at (centres)	'U' Channel Fixed at (centres)	Studs* at (centres)
5 Metres plus	300mm	600mm	600mm
3 - 5 Metres	100mm	400mm	300mm
1 - 3 Metres	50mm	300mm	150mm

* Stud centres also dependant on partition maximun height

Knauf recommended minimum board bending radii*:

Knauf Board Thickness	Minimum Radius
6.5mm (Knauf flexible board)	300mm
12mm	1.5 Metre
15mm	2.5 Metre

* Note: Based on Knauf Wallboard.

DESIGN SOLUTIONS CEILINGS

C-Form 1 Ceiling System

The Knauf C-Form I Ceiling System can accept some degree of loading and uses fast drywall construction techniques.

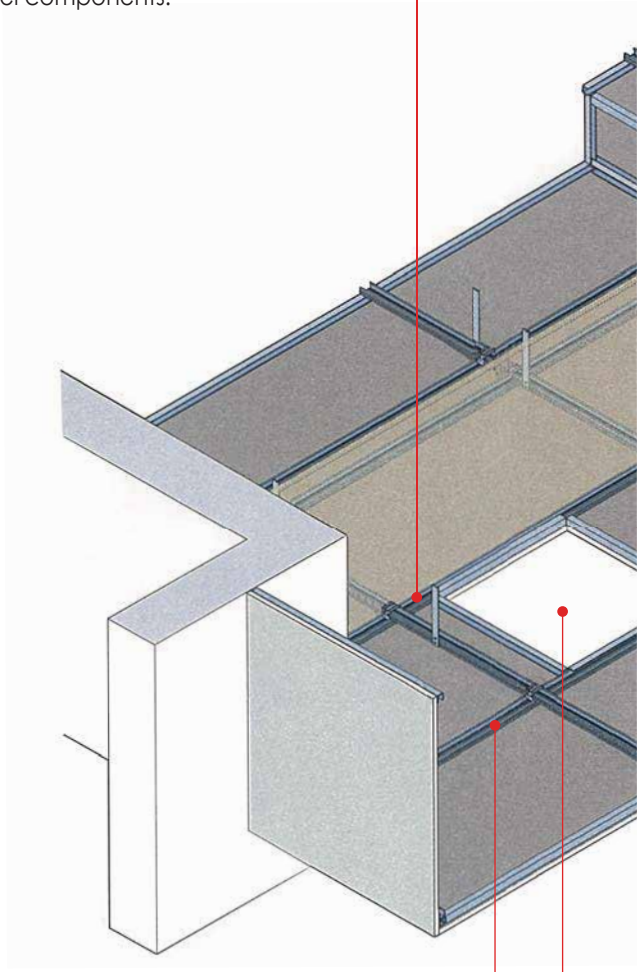
It should be used for larger ceiling areas (50m^2 and over) and for spans over 4m. It is also ideal for where deeper ceiling voids are required (over 450m).

The system utilises one or more layers of any of the Knauf range of plasterboards, depending on the performance required. The boards are fixed onto a double lightweight metal framework of Knauf 'C' Channels and Knauf 'U' Channels.

The lightweight galvanised is suspended by either strap hangers or angle sections fixed to the structural soffit with soffit cleats.

Bulkheads

The framing for bulkheads is built up from standard 'C' and 'U' channel components.



'C' Channels

The lower 'C' channels are clipped to the upper 'C' channels by means of channel intersection connectors. The spacing of the upper 'C' channles varies according to the weight of the ceiling specified.

'Knauf 'C' Channel

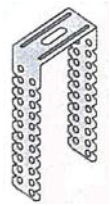
Forms the main supports

Access panels

Access panels can be provided in the ceiling between support channels. Framing is formed with 'C' channels connected by means of noggin channel connectors. The opening is then ready to receive a proprietary access hatch.

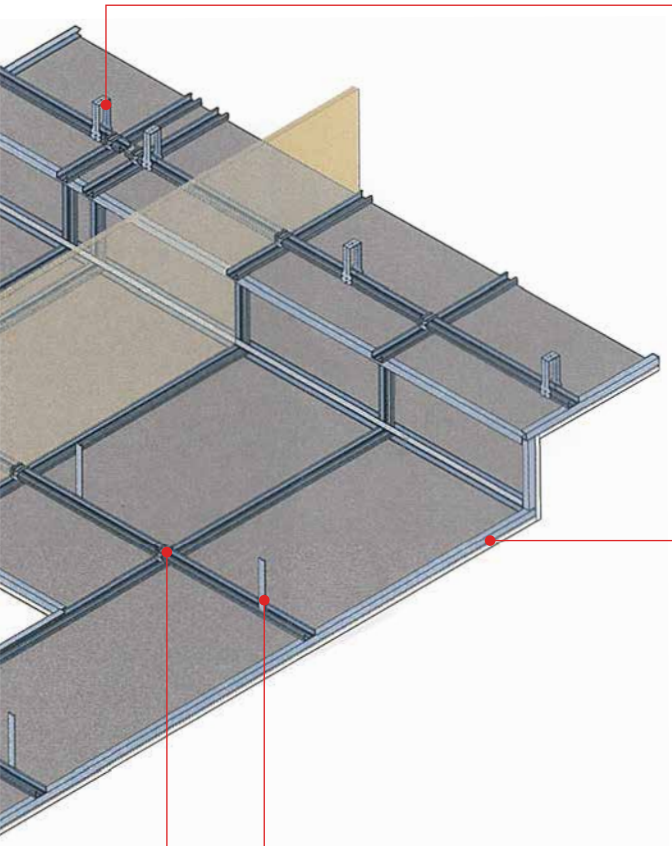
Noggin Channel Connectors

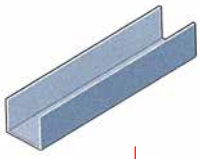
When KNAUF plasterboard must be supported at all four edges, or where a point load requires support between the lower 'C' channels, channel sections are fitted between the lower 'C' channels and connected by means of noggin channel connectors.



'U' Mounting Brackets

An optional fixed hanger which is screw-fixed directly to the structural soffit, for use where clearance above the plasterboard is not sufficient for suspension roads and adjustable channel hangers.





Perimeter channels

Provide support at the edges of the ceiling and consist of 'U' channel sections. These are screw-fixed to perimeter walls at the level of the lower 'C' channel supports. 'U' channels are also used to build up the framing for bulkheads, changes of level and access panel openings.

Suspension Rods and Adjustable Channel Hangers

The suspension rods support the upper 'C' channels of the system, the height of which can be adjusted by means of the movable channel hangers. Spacing depends on the weight of the ceiling (see loading information, page 46). Additional suspension rods can be used to support point loads such as luminaires.

'Knauf 'C' Channels Connector

For connecting straight lengths ot 'c' channel.

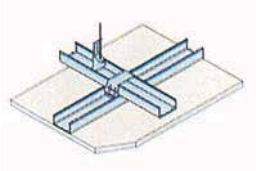
Channel Intersection Connectors

Are used to connect the 'C' channels forming the C-Form support grid.

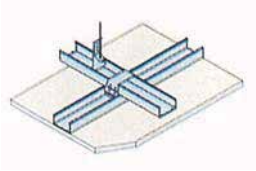
PERFORMANCE/LOADING

Typical Applications to Timber and Concrete Soffits

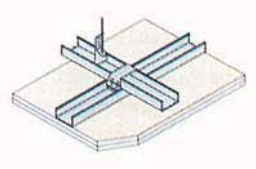
C-FORM I - PERFORMANCE INFORMATION



One layer of 12mm KNAUF plasterboard screw-fixed to lower 'C' channels.



One layer of 15mm KNAUF plasterboard screw-fixed to lower 'C' channels



Two layers of 12.5 mm KNAUF plasterboard screw-fixed with staggered joints to lower 'C' channels, incorporating a 50mm Rockwool , 60kg/m^3

BOARD TYPE	FIRE RESISTANCE (hours)	WEIGHT (MAXIMUM FOR CEILING SYSTEM) (kg/m^2)	MAX CENTRES OF HANGERS ON UPPER 'C" CHANNELS (mm)	MAX CENTRES OF UPPER 'C' CHANNELS (mm)	MAX CENTRES OF LOWER 'C' CHANNELS (mm)
Standard	N/A				
Fireshield	N/A	12	2000	1200	450/600
Moistureshield	N/A				
Standard	N/A				
Fireshield	N/A	17	1500	1100	450/600
Moistureshield	N/A				
Standard	N/A				
Fireshield	1.0	22	1250	1000	450/600
Moistureshield	N/A				

C-FORM I - LOADING INFORMATION

FIXING CENTRES FOR:	TOTAL LOAD INCLUDING WEIGHT OF CEILING SYSTEM (kg/m^2) - THIS INCLUDES ANY ADDITIONAL LIGHTING/VENTILATION SYSTEM FITTINGS								
	10	15	20	25	30	35	40	45	50
HANGER	2000	1500	1250	1000	900	800	750	675	625
UPPER 'C' CHANNEL	1200	1100	1000	950	900	875	850	825	800
LOWER 'C' CHANNEL	450 600	450 600	450 600	450 600	450 600	450 600	450 600	450 600	450 600

The C-Form I lower 'C' channels should be located at maximum 450mm centres for 12.5mm KNAUF plasterboard, or maximum 600mm centres for 15mm KNAUF plasterboard.

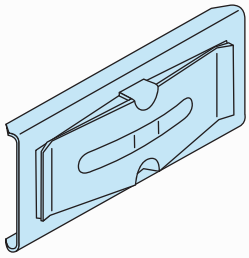
DESIGN SOLUTIONS CEILINGS

LD-19 Ceiling System

The LD-19 ceiling frame system is designed for light duty application where a single layer of 12mm/12.5mm thick plasterboard is screw-fixed onto the frame.

System overview - LD 19 Ceiling System

C-38 Channel.....1220mm (48") c/c
W-Bar.....407mm (16") c/c
Suspension Bolt.....1220mm (48") c/c

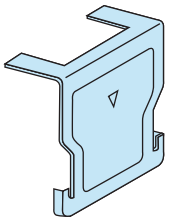


Channel Joint

Product	Channel Joint
Packing	300 pcs

Knauf Plasterboard Ceiling

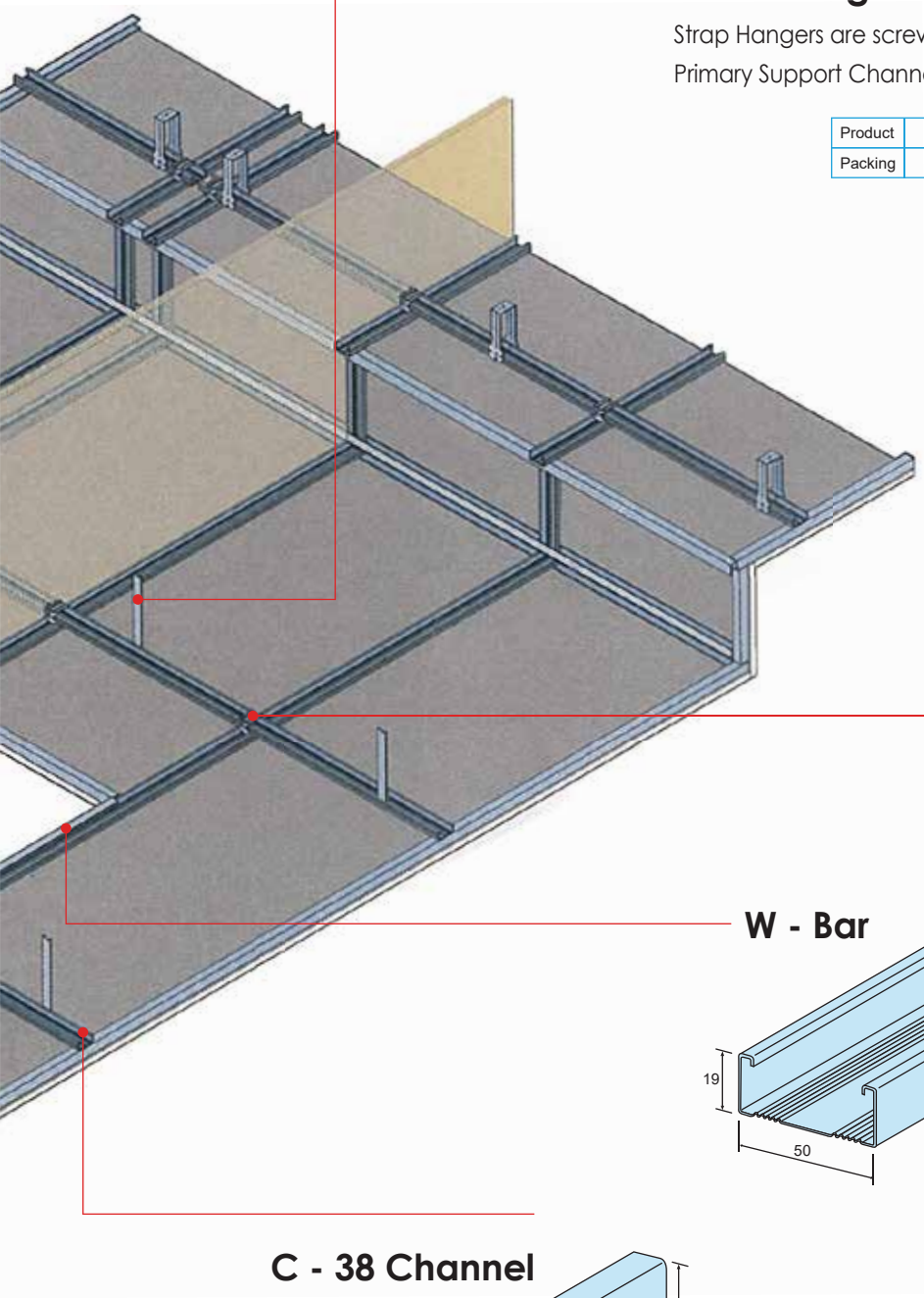
One layer of Knauf Plasterboard is screw-fixed to the lower 'W' Channels from below



LD19 W - Clip

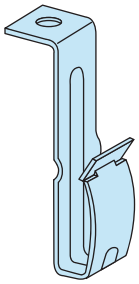
Product	W - Clip
Packing	500 pcs

Where multi-layers of 12mm/12.5mm thick, or single layer of 15mm thick plasterboard, or cement board / calcium silicate is requirred, KNAUF C-Form I (Heavy Duty) ceiling system shall be used. Data regarding ceiling loading and framing arrangement are available.



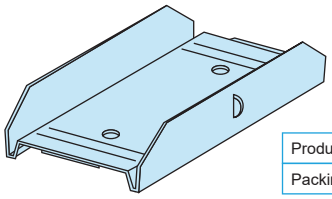
LD 19 Hanger

Strap Hangers are screwed to the Primary Support Channels



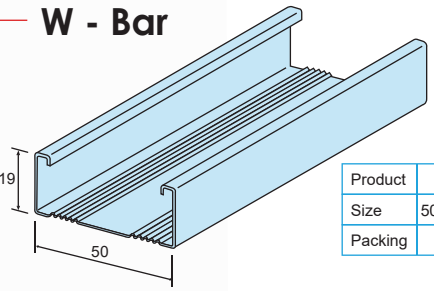
Product	Hanger
Packing	300 pcs

W - joint



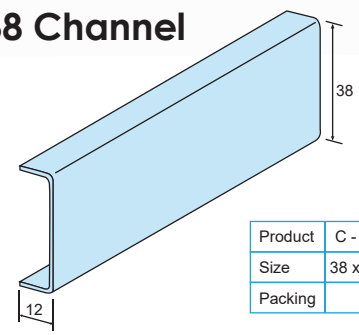
Product	W - Joint
Packing	200 pcs

W - Bar



Product	W - Bar
Size	50 x 19 x 0.4mm
Packing	10 pcs

C - 38 Channel



Product	C - 38 Channel
Size	38 x 12 x 0.8mm
Packing	10 pcs

Knauf Rockwool

- A semi-rigid slab of rock mineral wool (Size: 1.2m X0.6m,
- Density: 40~200kg/m^3 , Thickness: 25~150mm).
- Different facings, densities and sizes are available upon request.

Fire Performance

Knauf Rockwool is classified as non-combustible to BS 476: Part 4: 1970

Airborne Sound

Airborne sound sources produce noise by vibrating the air immediately around the sound sourse.

Typical sources include the human voice, televisions, musical instruments, traffic and sound systems.

Sound Absorbency

The sound absorption characteristics of mineral wool make it ideal for use in partitions to assist in absorbing sound within a cavity.

Tested in a reverberation chamber in accordance with BS EN ISO 354: 2003

Weight (kg) / Thickness (mm)	125	250	500	1000	2000	4000	NRC
60kg / 50mm	0.25	0.65	1.05	1.10	1.10	0.95	0.98
100kg / 50mm	0.35	0.85	1.10	1.10	1.15	1.10	1.05